

## REMARKS/ARGUMENTS

Claims 1-28 are pending in this application. In this Response, claims 1, 4, 10, 18, 21 and 22 are amended and claims 3 and 20 are canceled without prejudice or disclaimer. The amendments to claims 1, 4, 10, 18 and 22 are entirely supported by the teachings found in the specification as originally filed at p. 6 (last paragraph), pps. 7-9, the paragraph bridging pp. 21-22 and pp. 25, lines 3-5. No new matter is, thus, added by these amendments. Claims 4 and 21 have also been amended to change the claims' dependency due to the cancellation (without prejudice or disclaimer) of the claims from which they originally depended. These amendments also add no new matter. Entry of the amendments proposed herein is respectfully requested. Upon such entry, claims 1, 2, 4-19 and 21-28, as amended, will be pending in this application for the Examiner's consideration.

### Claim Rejections Under 35 U.S.C. §103

Claims 1-4, 6-12, 15, 16, 18-22, 27 and 28 are rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over USP 6,656,287 ("Sanders") in view of Schultheiss, "Processing of Sugar Beets With Pulsed Electric Fields", *IEEE Transactions on Plasma Science*, Vol. 30, No. 4, August, 2002 ("Schultheiss") for the reasons set forth at pp. 2-6 of the Office Action. The rejection is respectfully traversed.

In response applicants have amended the independent method claims of the application (i.e., nos. 1 and 18) to recite that the separation of the cell juice from the electroporated biological material takes place, in contrast to the conditions encountered in the prior art (see discussion below), under a sufficiently low mechanical loading such that the biological material remains substantially unaltered in its form and character and is consequently supplied to a subsequent extraction treatment in such substantially mechanically unaltered form. In like manner, independent apparatus claim 10 has also been amended to recite that the full screw (5) for receiving the electroporated biological material is configured to separate off the cell juice from the electroporated material under a sufficiently low mechanical loading such that the biological material remains substantially unaltered in its form and character and is consequently supplied to the extraction step in such substantially mechanically unaltered form. Applicants

respectfully submit in this regard that one having an ordinary level of skill in this art, based on the teachings (including the examples) provided in the present specification (see, for example, p. 7, lines 1-9), would be readily able to select an appropriate "slight" level of mechanical loading such that the biological material subjected to the extraction is protected against any substantial alteration to its form and/or character.

As explained herein, the features added to the pending claims are believed to further distinguish applicants' claimed method and apparatus from those described in the prior art cited in the Office Action.

None of the cited prior art, whether taken individually or as combined by the Examiner, would disclose or even suggest a basically pressure-free separation of cell juice from the biological material, as now recited in applicants' claims. The extraction steps disclosed in the prior art, which are, in fact, mechanical extractions by nature (see applicants' previous response dated January 5, 2009 for a further discussion of why the technique claimed for use in applicants' method does not constitute a "mechanical" extraction), including even the extraction of contents from electroporated material, requires the application of a high mechanical load upon the biological materials, which always, i.e., inherently results in mechanical alteration of the material. In contrast, the presently claimed method and apparatus operates according to the surprising discovery by the present applicants that cell juice can be separated off (i.e., from the electroporated material) by simply tumbling and/or turning the biological material without mechanical loading, which serves to preserve the form and character of the biological material.

Applicant submits that, for example, the Schultheiss reference teaches a method wherein, in step (b), the separation of a cell juice from the biological material is effected by mechanical loading. Schultheiss clearly states that the contents of the biological material (i.e., sugar beets) are either extracted by cold pressing or, as an alternative, with water via a diffusion extraction (see, e.g., Schultheiss at p. 1548, right-hand column, last two lines and p. 1549, right-hand column, second paragraph, first two lines). The use of such mechanical extraction techniques, as would be well-known to those having ordinary skill in this field, would inherently exert a significant mechanical loading on the biological material, thus producing undesirable changes in the form and character of the biological material.

The unexpected improvement offered with the use of a technique as claimed wherein the separation of juice from the electroporated material takes place at a sufficiently low mechanical loading such that the biological material remains substantially unaltered in its form and character, is discussed at several locations in the written description of applicants' invention. As noted, e.g., on p. 7, lines 17, *et seq.*, "The low mechanical loading [provided with the use of the presently claimed method] is . . . significantly reduced as compared [to] high mechanical loading, known from the prior art, of more than 2 Mpa, chiefly of from approximately 10 to approximately 30 Mpa, which is tantamount to the biological material being pressed out.". (emphasis supplied). Neither Sanders, which is cited for its disclosure regarding the extraction of sugar from beets, albeit via a mechanical technique, nor Schultheiss, which the Examiner cites due to its disclosure re: electroporation, or even Sanders taken together with Schultheiss, would teach or suggest to use a methodology and device for extraction wherein the biological material is subjected to only light mechanical loading (e.g., of less than 0.5 Mpa) such that the biological material is substantially unaltered in its form and character in order that it may consequently be supplied to a subsequent extraction treatment in a substantially mechanically unaltered form. See also, the paragraph bridging pp. 7-8 of applicants' specification. In light of the above, claims 4 and 21 have been amended to recite that the mechanical pressurization of the biological material is always less than 0.5 Mpa (instead of "2 Mpa" as originally recited).

The benefits of the presently claimed process and device are clearly set forth, e.g., in the penultimate paragraph on p. 8 of the specification which teaches, ". . . [i]t advantageously follows that, because of the low mechanical loading, the cell juice which is separated off in step b) is essentially clear and not contaminated with the tissue constituents, in particular suspended substances, etc., which inevitably emerge in connection with high mechanical loading, and can therefore be isolated in particularly pure form. " (emphasis supplied by applicants).

Further to the above, applicants note that both the Sanders reference and the Schultheiss reference combined with Sanders to reject the claims under discussion herein, are extensively discussed in their previous response dated January 5, 2009 and those remarks and arguments are specifically incorporated herein by reference. In particular, applicants respectfully reiterate their view that the Examiner appears to have mis-construed the meaning of the term "extraction" by going so far as to attempt to correspond the mechanical pressing technique utilized in the prior

art with the chemical (solvent) extraction technique practiced according to the present claims. Schultheiss, as noted above, discloses a method wherein the separation of cell juice from biological material is effected by the application of a significant mechanical loading, i.e., in contrast to the recitation of the presently amended claims. The Sanders reference, moreover also does not disclose or even suggest an alkaline diffusion extraction technique as presently claimed. Sanders does disclose to clean the extracted juice in a subsequent step, but not the extraction of juice or other contents from biological material by such a solvent extraction step (as claimed by applicants). Cleaning and extraction are chemically independent processing steps and should not be directly compared as they represent entirely different operations.

For the reasons presented above, therefore, applicants respectfully submit that their claims 1-4, 6-12, 15, 16, 18-22, 27 and 28 are distinguishable over the combination of Sanders and Schultheiss cited to reject those claims and the Examiner is respectfully requested to reconsider and withdraw the §103(a) rejection based on the cited combination of references.

Further to the above, claims 5, 14, 17 and 23-24 are rejected at p. 6 in ¶20 of the Office Action over Sanders in view of Schultheiss as applied to claims 1, 10 and 18, and further in view of USP 4,323,007 to Hunt. This rejection is also respectfully traversed.

Claims 5 and 14 depend, directly or indirectly, on independent method claim 1 and those claims thus include all of the features contained in claim 1. Claims 23 and 24 depend, directly or indirectly, on independent method claim 18 and those claims thus include all of the features contained in claim 18. Finally, claim 17 depends from independent apparatus claim 10 and thus that claim includes all of the features recited by claim 10. Thus, rejected claims 5, 14, 17 and 23-24 are believed to be distinguishable over Sanders in combination with Schultheiss for the same reasons as claims 1, 18 and 10 as discussed above.

The Examiner notes, in regard to the rejection of claims 5, 14, 17 and 23-24 both Schultheiss and Sanders do not discuss the details of the feeding screw, despite that they both disclose the use of screw conveyers. The Examiner has, thus, combined Hunt with the other two references on the basis of its disclosure regarding a method of extracting juice from fruits with the use of a perforate extracting screw. Hunt, however, entirely fails to remedy the deficiencies noted above of the combination of Sanders with Schultheiss. That is, the Hunt reference contains no disclosure which would teach or suggest to one having an ordinary level of skill in this art

either a process or an apparatus configured to separate off cell juice from electroporated material under a mechanical loading that is sufficiently low such that the biological material remains substantially unaltered in its form and character and is consequently supplied to a subsequent solvent extraction treatment in a substantially mechanically unaltered form.

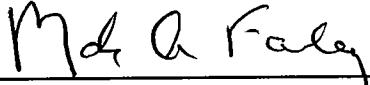
The Examiner is, therefore, respectfully requested to reconsider and withdraw the rejection of applicants' claims 5, 14, 17 and 23-24 under 35 U.S.C. §103(a).

### Summary

The claim amendments and remarks presented herein are believed to overcome all of the grounds for rejection set forth in the Examiner's Office Action concerning this application and thus to place the entire application in condition for an allowance. If the Examiner does not agree, however, she is respectfully invited to telephone applicants' representative at the number below wherein such representative might arrange a telephonic interview with the Examiner whereby an attempt may be made to resolve any remaining impediments to patentability without, if appropriate, the necessity of issuing a further Office Action regarding this matter.

THIS CORRESPONDENCE IS BEING  
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THE PATENT AND TRADEMARK OFFICE  
EFS FILING SYSTEM ON June 2, 2009.

Respectfully submitted,

  
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